F-3 End

pinhole apertures. There is also described the possibility to illuminate a larger volume element and to combine it with the above described confocal, parallel focussing of small subvolume elements.

Page 15, please delete the fourth paragraph and replace it with the following paragraph:

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According to the invention, at least two measuring volumes in common or assembled in groups are focussed confocally onto at least one detector element of a photon-registrating measuring element in the image plane in the signal registration.

IN THE CLAIMS:

Cancel claims 33-46, 53-59, and 67, without prejudice or disclaimer.

Add the following claims:

68. A method for screening substances to determine their pharmacological activity comprising the steps of:

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- contacting said substance with a pharmacological target molecule in a sample compartment;
- irradiating that sample compartment to generate a signal functionally related to the interaction of said substance with said pharmacological target using a confocal optical system; and
- withdrawing a withdrawal volume element comprising said interacting substance and target molecule to a receptor compartment wherein the withdrawal is triggered by said signal.

69. The method of claim 68, wherein said confocal optical system comprises a multitude of confocal pinhole apertures in the image plane.

70. The method of claim 68, wherein said confocal optical system comprises optical waveguides in the image plane.

71. The method of claim 68, wherein said confocal optical system comprises multiarray detectors in the image plane.

72. The method of claim 68, wherein said signal is produced by a correlated analytical system.

73. The method of claim 72, wherein said correlated analytical system is a fluorescence correlation spectroscopy system.

74. The method of claim 68, wherein said contacting is in the presence of a fluorescently labeled ligand.

75. The method of claim 68, wherein withdrawing said withdrawal volume element is by receptor means selected from the group consisting of a capillary tube or a membrane.

76. The method of claim 75, wherein said capillary tube has a tip connecting said sample compartment to said receptor compartment.

77. The method of claim 76, wherein said tip has an aperture with size D according to the formula 100 $\mu m \leq D \leq 0.1 \mu m$.

78. The method of claim 75, wherein said membrane has a pore connecting said sample compartment to said receptor compartment.

79. The method of claim 78, wherein said pore has an aperture with size D according to the formula 100 $\mu m \leq D \leq 0.1 \mu m$.

80. The method of claim 68, wherein said signal generating and withdrawing steps are repeated in series, whereby separately withdrawn volume elements are gathered in said receptor compartment.

81. The method of claim 68, wherein said withdrawing step is performed by a procedure selected from the group consisting of inducing an electrical field between a sample fluid in said sample compartment and a receptor fluid in said receptor compartment, inducing in said

sample compartment a pressure greater than in said receptor compartment, inducing a light pressure impulse; and combinations thereof.

82. The method of claim 81, wherein said withdrawing step is performed by briefly applying an electrical field between first and second electrodes, wherein said first electrode contacts said sample fluid in said sample compartment and said second electrode contacts said receptor fluid in said receptor compartment.

83. The method of claim 81, wherein said withdrawing step is performed by inducing a pressure differential by increasing pressure inside said sample compartment and/or by reducing pressure inside said receptor compartment.

84. The method of claim 83, wherein said pressure differential is caused (a) by reducing pressure using a piezo-controlled dispenser module having a filling volume inside said receptor compartment or (b) increasing pressure or reducing pressure caused by change of piston position of a coupled piston pump device.

85. The method of claim 84, wherein said piston pump device is controlled by a stepping motor and the pressure increase amount is controlled by the number of droplets dispensed by steps of the stepping motor.

86. The method of claim 68, wherein said optical system detects said signal, analyzes specific molecular properties of ingredients of said sample, and time-controls the withdrawing on-line under control of computer software.

87. A method for identifying pharmacological target molecules comprising the steps of:

- contacting a target molecule with a pharmacologically active substance in a sample compartment;

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- irradiating that sample compartment to generate a signal functionally related to the interaction of said substance with said target molecule using a confocal optical system; and

- withdrawing a withdrawal volume element comprising said interacting substance and said target molecule to a receptor compartment wherein the withdrawal is triggered by said signal.

88. The method of claim 87, wherein said confocal optical system comprises a multitude of confocal pinhole apertures in the image plane.

89. The method of claim 87, wherein said confocal optical system comprises optical waveguides in the image plane.

90. The method of claim 87, wherein said confocal optical system comprises multiarray detectors in the image plane.

91. The method of claim 87, wherein said signal is produced by a correlated analytical system.

92. The method of claim 91, wherein said correlated analytical system is a fluorescence correlation spectroscopy system.

93. The method of claim 87, wherein said contacting is in the presence of a fluorescently labeled ligand.

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94. The method of claim 87, wherein withdrawing said withdrawal volume element is by receptor means selected from the group consisting of a capillary tube or a membrane.

95. The method of claim 87, wherein said capillary tube has a tip connecting said sample compartment to said receptor compartment.

96. The method of claim 95, wherein said tip has an aperture with size D according to the formula 100 $\mu m \leq D \leq 0.1 \mu m$.

97. The method of claim 94, wherein said membrane has a pore connecting said sample compartment to said receptor compartment.

98. The method of claim 97, wherein said pore has an aperture with size D according to the formula 100 μm ≤ D ≤ 0.1 μm.

99. The method of claim 87, wherein said signal generating and withdrawing steps are repeated in series, whereby separately withdrawn volume elements are gathered in said receptor compartment.

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100. The method of claim 87, wherein said withdrawing step is performed by a procedure selected from the group consisting of inducing an electrical field between a sample fluid in said sample compartment and a receptor fluid in said receptor compartment, inducing in said sample compartment a pressure greater than in said receptor compartment, inducing a light pressure impulse; and combinations thereof.

101. The method of claim 100, wherein said withdrawing step is performed by briefly applying an electrical field between first and second electrodes, wherein said first electrode contacts said sample fluid in said sample compartment and said second electrode contacts said receptor fluid in said receptor compartment.

102. The method of claim 100, wherein said withdrawing step is performed by inducing a pressure differential by increasing pressure inside said sample compartment and/or by reducing pressure inside said receptor compartment.

103. The method of claim 102, wherein said pressure differential is caused (a) by reducing pressure using a piezo-controlled dispenser module having a filling volume inside said receptor compartment or (b) increasing pressure or reducing pressure caused by change of piston position of a coupled piston pump device.

104. The method of claim 103, wherein piston pump device is controlled by a stepping motor and the pressure increase amount is controlled by the number of droplets dispensed by steps of the stepping motor.

105. The method of claim 87, wherein said optical system detects said signal, analyzes specific molecular properties of ingredients of said sample, and time-controls the withdrawing on-line under control of computer software.

106. A device for performing the method according to claim 68 comprising

- a sample compartment and a receptor compartment connected by
- receptor means;